

We claim:

1. A distributed private branch telephone exchange for processing telephone calls, comprising:

an asynchronous local area network carrying telephony traffic;

a PSTN interface connecting the PSTN and said local area network; and

a station interface connecting a telephone device and said local area network;

wherein said PSTN interface and station interface translate telephony traffic into asynchronous data traffic for transmission over said local area network.

2. The invention of claim 1 wherein said telephony traffic includes telephony signaling and voice signals.

3. The invention of claim 1 wherein said telephony signaling is translated into asynchronous messages and synchronous telephony traffic is translated into asynchronous media streams for transmission over said local area network.

4. The invention of claim 1 wherein said local area network is an ATM network.

5. The invention of claim 1 further comprising an ATM switch for routing telephony traffic.

6. The invention of claim 1 wherein said local area network is an Ethernet network.

7. The invention of claim 1 wherein said local area network is a Cells in Frames Ethernet network.

8. The invention of claim 1 wherein said local area network is an Internet protocol (IP) over ATM network.

5 9. The invention of claim 1 wherein said local area network also carries computer data traffic.

10. A distributed PBX for processing telephone calls comprising:

10 a number of networked multi-port modules; said multi-port modules converting between synchronous data signals and asynchronous data signals,

said multi-port modules further comprising:

15 a first port connected to a telephony environment;

a second port connected to a local area network;

a third port connected to a PC having a digital storage device;

20 wherein any one port can direct data to any of the other ports.

25 11. The invention of claim 10 wherein said multi-port module further comprises a digital signal processor generating and receiving multiple data streams.

30 12. The invention of claim 10 wherein directing data between said third port and one of the other ports implements voice storage.

13. The invention of claim 12 wherein directing data between said third port and one of the other ports implements voice mail.

35 14. The invention of claim 12 wherein directing data between said third port and one of the other ports implements auto attendant.

15. The invention of claim 12 wherein directing data between said third port and one of the other ports implements an interactive voice response.

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16. The invention of claim 12 wherein directing data between said third port and one of the other ports implements fax transmission.

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17. The invention of claim 10 further comprising PBX software controlling the state and interconnection of a number of network multi-port modules.

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18. The invention of claim 10 wherein multi-port modules converting between synchronous and asynchronous data is performed using first-in-first-out buffering.

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19. A distributed private branch telephone exchange for processing telephone calls, comprising:

an ATM local area network carrying data and telephony traffic;

a network server including an interface connecting PSTN outside trunk circuits and said local area network;

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a client PC including a station interface connecting with a telephone device and said local area network;

an ATM switch routing local area network data and telephony traffic between said network interface and said station interface;

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a telephone hub interfacing a multiple number of telephones to said ATM switch;

wherein said network interface and station interface translate telephony signaling into asynchronous messages and synchronous telephony traffic into asynchronous media streams for transmission over said local area network.

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20. A distributed PBX for processing telephone calls comprising:

a local area computer data network for
transmitting data traffic over a transmission media,
a real-time telephony networks time-sharing
said transmission media; wherein said real-time telephony
network carries telephony messages containing telephony
signaling and telephony media streams; and
a multi-port module generating telephony
messages reporting POTS telephony events, said telephony
messages transmitted over said real-time telephony
network.

21. The invention of claim 1 wherein said multi-
port module responds to telephony messages for
controlling POTS telephony functions.

22. The invention of claim 1 wherein said telephony
messages instruct said multi-port module to establish a
connection to a second multi-port module over said real-
time network.